REMARKS

Applicant intends this response to be a complete response to the Examiner's Non-Final Office Action. Applicant has labeled the paragraphs in his response to correspond to the paragraph labeling in the Office Action for the convenience of the Examiner.

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-19 and 45-47, drawn to a composition and methods of preparing, classified in class 507, subclass 239.

II. Claims 20-44, drawn to a method of treating a well to remove noxious sulfur species from a fluid(s), classified in class 166, subclass 310.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the composition of, or prepared by, the Group I invention could be used for treating fluids other than in a well or well bore environment and/or possesses utility in applications other than the removal of noxious sulfur species, e.g., as a corrosion inhibitor or additive in a cleaning formulation.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Robert W. Strozier on January 13, 2006 a provisional election was made without traverse to prosecute the invention of Group II, claims 20-44. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-19 and 45-47 stand withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Applicant expressly adopted the election requirement made telephonically.

Specification

7. The disclosure is objected to because of the following:

> The chemical formula recited in pages 2, 3 and 5, such as that presented in Para [0007] for the sulfur scavenging composition or compound appears to be erroneous. More specifically, on the left side of the formula, the subscripts "k" and "m" presently appearing by the H atom appear to be misplaced. In this regard, it does not appear correct that the number of H atoms can be arbitrarily changed, insofar as such number is normally dictated by the valence of the adjacent atom or molecule.

> Moreover, the left side of the formula fails to correspond to the right side, which would appear to be required, overall, in order to comprise a "diamine terminated" amine-aldehyde adduct, as intended. It appears, instead, that the said subscripts should modify or appear by the "(R"N - R'HC)" group(s) in the left side of the formula. Appropriate correction is required.
>
> It is further noted with respect to the recited formula that the presence of an oxygen atom or species is optional, i.e., "can be oxygen". However, since the resulting formula is formed, in part, upon reaction of an amine with an aldehyde, it would appear an oxygen atom/species must be present. Thus, further correction and/or clarification is required (e.g., a condensation reaction occurs?) .

Applicant has amended the specification to correct the apparent defects in the structures. When Applicant's attorney originally constructed the formulas, he was attempting to maintain symmetry in the structures so that the subscripts would be in mirror image relationship, as clearly they are and indicate the number of bimolecular amine-aldehyde arms in the compositions. Unfortunately, the undesired consequence and the unintended result was that it appears that the subscripts on the left side of the formula are associated with the H atoms and not the parenthetical - the bimolecular amine-aldehyde adduct. Applicant has amended the application to correct these defects by moving the subscripts to the right side of the left side parentheses. Applicant assert that no new matter is added in that it is clear from the disclosure and the description and the chemistry of the specification that it is the amine-aldehyde portion of the formula that are the subject of the subscripts k, l, m and n. Applicant, therefore, respectfully requests withdrawal of these objections.

Rejections Under 35 U.S.C. §112, ¶2

9. **Claims 20-26** stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner contends as follows:

> Claim 20 is deemed to be technically inaccurate with respect to the illustrated chemical formula, for the reasons set forth above in Para 7), and accordingly, the claim is deemed indefinite.
>
> Claims 21-26 are similarly indefinite insofar as they depend from claim 20.

Applicant has amended claim 20 and the other claims that include the formula (including the withdrawn claims) to conform the claims with the amended specification formulas. Again, no new matter is added in that it is clear from the disclosure and the description and the chemistry of the specification that it is the amine-aldehyde portion of the formula that are the subject of the subscripts k, l, m and n. Applicant, therefore, respectfully requests withdrawal of these rejections.

Rejections Under 35 U.S.C. §102

11. **Claims 20-22, 26-29, 33 and 40-44** stand rejected under 35 U.S.C. 102(b) as being anticipated by Gatlin (5,498,707).

The Examiner contends as follows:

> Gatlin discloses the treatment or contact of fluid streams with an exemplary amine-based sulfide or "noxious sulfur species" scavenger composition. While Gatlin does not explicitly call his sulfur scavenger a bimolecular amine-aldehyde "adduct" or set forth the formula of claim 20, it is deemed that the sulfur scavenging agent or composition in comprising, in one embodiment, the reaction product of a diamine with the previous reaction product of a primary amine, such as an alkanol amine, with an aldehyde, will necessarily or inherently resemble the recited formula and/or comprise a bimolecular amine-aldehyde "adduct", as called for in independent claims 20, 27 and 40. More specifically, the final reaction product of the diamine with the primary amine-aldehyde intermediate product would appear to necessarily comprise or yield a "diamine terminated" bimolecular amine-aldehyde "adduct", as described in applicant's disclosure. It is further deemed since the reacting diamines are "sterically hindered", as set forth in Gatlin (col. 2, lines 40-47), the formation of an "adduct" or inclusion complex as the final reaction product or "liquid resin" would appear to occur.
>
> The process of Gatlin is deemed to encompass the step or limitation of claims 21, 28 and 41 insofar as Gatlin does disclose any aldehyde liberation occurring throughout the process.
>
> The process of Gatlin further includes a solvent with or comprising the sulfide scavenger/converter composition, as called for in claims 22, 29 and 42.
>
> As per claims 26 and 33, note that Gatlin (note col. 4, lines 48-50) makes numerous references to the use or inclusion of "amine heads".
>
> As per claims 43 and 44, it is noted that Gatlin, in large measure, is directed to the treatment or purification of "gaseous and liquid hydrocarbon streams" (col. 3, lines 24-33) wherever they occur, such as "lines", etc.. Thus it is deemed, overall, that the process of Gatlin inherently or necessarily encompasses treatment in the recited conventional equipment associated with handling such "gaseous and liquid hydrocarbon streams", such as oil/gas field equipment, flowline(s) and/or refinery.

Applicant totally agrees that Gatlin does not disclose a bimolecular reaction product of an amine and an aldehyde that is then terminated with a diamine. The key to the compositions of the present invention is the formation of the bimolecular amine-aldehyde reaction product and then terminating the bimolecular amine-aldehyde reaction product with sufficient diamine to reduce or eliminate the liberation of aldehyde upon heating. In the present invention, the inventor gives an example of a composition that was not formed with sufficient diamine to eliminate the liberation of aldehyde upon heating. It is apparent from this example, that merely adding diamines is not sufficient to achieve the desired result. Moreover, the present materials are not polymers, but are

structures of only moderate molecular weight, while the Gatlin products are polymers, where the contain some insoluble polymers. See, e.g., US5498707 at Col. 7, ll. 32-40.

Because Gatlin does not disclose a method for scavenging sulfur using compositions formed by reacting a biomolecular amine-aldehyde reaction product and sufficient diamine to reduce or eliminate the liberation of aldehyde upon heating or non polymeric compound of general formula (I), Gatlin cannot anticipate the present invention. Applicant, therefore, respectfully requests withdrawal of this section 102(b) rejection.

Rejections Under 35 U.S.C. §103

13. **Claims 24, 25 and 30-32** stand rejected under 35 U.S.C. 103(a) as being unpatentable over Gatlin (5,498,707).

The Examiner contends as follows:

> As per claims 24, 25, 31 and 32, in carrying out the process of Gatlin, it would have been an obvious matter of choice or expedient to further monitor the concentration of sulfur species, and tailor the scavenger composition concentration accordingly, in order to render the overall fluid treatment process more cost effective and economically feasible.
>
> As per claim 30, it is noted that Gatlin (col. 6, line 64 - col. 7, line 7) discusses different injection options or schemes, such as multiple injection points, in order to "enhance dispersion and maximize conversion of the sulfides". In this regard, it is deemed that "atomizing", e.g., using a nozzle, is a well known and exemplary manner of injection or dispersion. Accordingly, it would have been an obvious matter of choice or design to one of ordinary skill in the art to which the invention pertains, to atomize or deploy an atomizing means for injecting the sulfide scavenger into the sulfide-bearing fluid(s) in order to enhance the contact and scavenging of the sulfides.

Applicant reasserts his comments regarding Gatlin above. Gatlin does not disclose, teach or suggest the method for using the compositions of this invention, because Gatlin does not disclose, teach or suggest the compositions of this invention.

Because Gatlin does not disclose, teach or suggest a method for scavenging sulfur using compositions formed by reacting a biomolecular amine-aldehyde reaction product and sufficient diamine to reduce or eliminate the liberation of aldehyde upon heating or non polymeric compound of general formula (I), Gatlin cannot render the present invention obvious. Applicant, therefore, respectfully requests withdrawal of this section 103(a) rejection.

14. **Claims 23 and 34-39** stand rejected under 35 U.S.C. 103(a) as being unpatentable over

Gatlin (5,498,707) as applied to claim 20 above, and further in view of Walhaug et al (4,625,803).

The Examiner contends as follows:

> Gatlin does not disclose the treatment of a well and/or well fluids, per se, however Gatlin, as noted above, discloses the treatment and removal of sulfide species from aqueous fluids of "gaseous and liquid hydrocarbon streams" (col. 3, lines 24-33). Walhaug et al discloses an exemplary system and method for injection of treatment chemicals to modify or treat producing hydrocarbon fluids in a well utilizing a coiled tubing string (note Figure 2).
>
> Accordingly, it would have been obvious to one of ordinary skill in the art to which the invention pertains, to apply the exemplary sulfide scavenger composition set forth in the method of Gatlin for the removal of sulfide or other noxious sulfur species from a producing gaseous or liquid hydrocarbon stream in a well by injecting such scavenger composition into a well through a coiled tubing, as taught by Walhaug et al, as called for in claim 23, as well as independent claim 34, in order to remove sulfide or sulfur species from the production hydrocarbon fluids, thus rendering the production effluent more suitable for downstream treatment or refining.
>
> The process of Gatlin, as modified by Walhaug et al, is deemed to encompass the step or limitation of claim 35, insofar as Gatlin does disclose any aldehyde liberation occurring throughout the process.
>
> The process of Gatlin further includes a solvent with or comprising the sulfide scavenger/converter composition, as called for in claim 36.
>
> As per claims 38 and 39, in carrying out the modified process of Gatlin, it would have been an obvious matter of choice or expedient to further monitor the concentration of sulfur species, and tailor the scavenger composition concentration accordingly, in order to render the overall fluid treatment process more cost effective and economically feasible.

Applicant reasserts his comments regarding Gatlin above. Gatlin does not disclose, teach or suggest the method for using the compositions of this invention, because Gatlin does not disclose, teach or suggest the compositions of this invention. The addition of Walhaug et al only adds the disclosure of coiled tubing injection, but does not cure the deficiencies of Gatlin – Gatlin does not disclose, teach or suggest the compositions of this invention

Because the combination of Gatlin and Walhaug et al do not disclose, teach or suggest a method for scavenging sulfur using compositions formed by reacting a biomolecular amine-aldehyde reaction product and sufficient diamine to reduce or eliminate the liberation of aldehyde upon heating or non polymeric compound of general formula (I), the combination cannot render the present invention obvious. Applicant, therefore, respectfully requests withdrawal of this section 103(a) rejection.

Having fully responded to the Examiner's Non-Final Office Action, Applicant respectfully

urges that is application be passed onto allowance.

If it would be of assistance in resolving any issues in this application, the Examiner is kindly invited to contact applicant's attorney Robert W. Strozier at 713.977.7000

Date: **April 27, 2006**

Respectfully submitted,

Robert W. Strozier
Reg. No. 34,024